

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**

### **REMARKS/ARGUMENTS**

1. Amendments to the Claims.

Claims 1-2, 4-6, 8, 10-11, and 13-14 remain in this application and new claims 15-19 have been added, support for which may be found throughout the specification and, particularly, at pages 8 and 9. Claims 1, 2, 4-8 and 11 have been amended. Claims 3, 7, 9 and 12 have been canceled.

2. Objections to the Claims Under 35 U.S.C. §112.

Claims 1-14 were rejected under 35 U.S.C. §112 as being indefinite. More particularly, claim 1 was rejected for failing to provide antecedent basis for "crystallized base layer." Claim 1 has been amended to provide the requisite antecedent basis. The Examiner further requires that the spelling of the word "crystallised" in claim 1 be corrected to "crystallized." As recognized in the dictionary, the word "crystallise" so spelled is well-recognized in the U.S. as the British version of crystallize and, therefore, Applicants do not believe that correction is necessary. See The Merriam-Webster Dictionary, Home and Office Edition, 1998, p. 126 (copy attached hereto as an Appendix). Nevertheless, Applicants have amended the claims as requested by the Examiner. Finally, claim 4 was rejected for failing to provide antecedent basis for "the upper area of the sleeve." Applicants have amended claim 4 to provide such antecedent basis.

3. Rejections to the Claims Under 35 U.S.C. §102.

Claim 1 was rejected under 35 U.S.C. §112 as anticipated by U.S. Patent No. 6,058,741 to Sobolev et al. Amended claim 1 requires, among other things, a temperature regulating device assigned to the sleeve and selectively adjusting the temperature of the sleeve, such that the temperature of the sleeve is lowered during melting and raised during run-off. In contrast, the discharge unit of Sobolev includes a discharge pipe surrounded by a cooling jacket, which constantly cools the discharge pipe. See Sobolev, Col. 3, lines 5-8; Col. 10, lines 42-57, and FIGS. 1 and 5. Sobolev does not disclose, teach or suggest a temperature regulating device for selectively adjusting the temperature of the sleeve, such that the temperature of the sleeve is lowered during the melt phase and is raised when drawing off the melt. See Specification, page 8, line 30 - page 9, line 5. For these reasons, claim 1 and claims 2, 4-7, 10 and 13-15 depending therefrom are patentable over Sobolev.

4. Rejections to the Claims Under 35 U.S.C. §103.

Claims 2-4 and 7 were rejected under 35 U.S.C. §103 as unpatentable over Sobolev in view of general skill in the art, U.S. Patent No. 5,567,218 to Ladirat and/or U.S. Patent No. 5,367,532 to Boen. The office action asserts that Ladirat teaches a temperature regulating device in the form of an electric heater/furnace in the wall surrounding the discharge pipe. The furnace of Ladirat serves to maintain the molten state of the melt during extraction by heating the discharge pipe. See Ladirat, Col. 1, lines 25-34. Neither Sobolev nor Ladirat, alone or in

combination, teach or suggest a temperature regulating device that is assigned to the sleeve and that lowers the temperature of the sleeve during melting and raises the temperature of the sleeve during discharge. Furthermore, the Ladirat discharge pipe is formed of a material, such as molybdenum, that resists corrosion by molten glass. A sleeve formed of molybdenum is not applicable for the processing of highly pure optical glasses because it would lead to an undesirable yellow-brown coloring. Consequently, there is no motivation to combine Ladirat with Sobolev to achieve the applications of the present invention. In contrast, to prevent corrosion of the sleeve, the present invention relies on the cooling of the sleeve by the temperature regulating device to form a protective crystallized layer of inorganic melt over the sleeve. Boen, alone or in combination with Sobolev and/or Ladirat, also fails to teach or suggest a temperature regulating device assigned to the sleeve, and lowering the temperature of the sleeve during melting and raising the temperature of the sleeve during discharge. For all of the above reasons, it is believed that claim 1 and claims 3, 4 and 7, by way of their dependency on claim 1, are patentable over the cited references.

5. Allowable Subject Matter

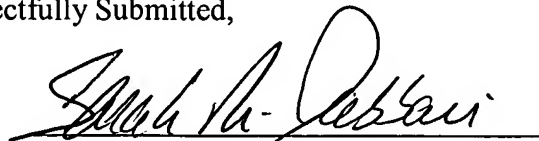
Applicants thank Examiner Halpern for indicating that claims 5-6 and 8-14 contain allowable subject matter and would be allowable if rewritten in independent form to include the limitations of the base claim and intervening claims. In view of the above-made amendments and arguments, Applicants believe that these claims are allowable in their dependent form. Nevertheless, Applicants have amended claim 8 to include the limitations of base claim 1.

**CONCLUSION**

Applicants contend that the claims, as amended, are in allowable form and respectfully request that action toward a Notice of Allowance be taken.

Respectfully Submitted,

By:



Sarah M. Jabbari, Reg. No. 47,679  
Baker & Daniels  
300 N. Meridian Street, Suite 2700  
Indianapolis, IN 46204  
Phone: (317) 237-0300  
Fax: (317) 237-1000  
E-mail: smjabbar@bakerd.com

# The Merriam-Webster Dictionary

---

HOME AND OFFICE EDITION

---



Merriam-Webster, Incorporated, Publishers  
Springfield, Massachusetts



**A GENUINE MERRIAM-WEBSTER**

The name *Webster* alone is no guarantee of excellence. It is used by a number of publishers and may serve mainly to mislead an unwary buyer.

*Merriam-Webster™* is the name you should look for when you consider the purchase of dictionaries or other fine reference books. It carries the reputation of a company that has been publishing since 1831 and is your assurance of quality and authority.

Copyright © 1998 by Merriam-Webster, Incorporated

Philippines Copyright 1998 by Merriam-Webster, Incorporated

Library of Congress Cataloging in Publication Data  
Main entry under title:

The Merriam-Webster dictionary. — Home and office ed.

p. cm.

ISBN 0-87779-606-8 (alk. paper)

1. English language — Dictionaries. I. Merriam-Webster Inc.

PE1628.M353 1998

423—dc21

97-39927  
CIP

The Merriam-Webster Dictionary, Home and Office Edition principal  
copyright 1995

All rights reserved. No part of this book covered by the copyrights hereon may be reproduced or copied in any form or by any means—graphic, electronic, or mechanical, including photocopying, taping, or information storage and retrieval systems—without written permission of the publisher.

Made in the United States of America

14151617RRD009998

# crouton • crystallize

126

gambling casino who collects and pays bets at a gambling table  
**crouton** \ˈkrō-tən\ *n* [*F* *croûton*, dim. of *croûte* crust] : a small cube of bread toasted or fried crisp  
**crow** \ˈkrō\ *n* 1 : any of various large glossy black birds related to the jays 2 *cap* : a member of an American Indian people of a region in Montana and Wyoming; *also* : the language of the Crow people  
**crow** *vb* 1 : to make the loud shrill sound characteristic of the cock 2 : to utter a sound expressive of pleasure 3 : EXULT, GLOAT; *also* : BRAG, BOAST  
**crow** *n* : the cry of the cock  
**crow-bar** \ˈkrō-bär\ *n* : a metal bar usu. wedge-shaped at the end for use as a pry or lever  
**crowd** \ˈkraʊd\ *vb* 1 : to press close 2 : to collect in numbers : THRONG 3 : CRAM, STUFF  
**crowd** *n* : a large number of people gathered together at random : THRONG  
**crown** \ˈkraʊn\ *n* 1 : a mark of victory or honor; *esp* : the title of a champion in a sport 2 : a royal head-dress 3 : the top of the head 4 : the highest part (as of a tree or tooth) 5 *often cap* : sovereign power; *also* : MONARCH 6 : a formerly used British silver coin — **crowned** \ˈkraʊnd\ *adj*  
**crown** *vb* 1 : to place a crown on 2 : HONOR 3 : TOP, SURMOUNT 4 : to fit (a tooth) with an artificial crown  
**crown vetch** *n* : a European leguminous herb with umbels of pink-and-white flowers and sharp-angled pods  
**crow's-foot** \ˈkrōz-ˈfʊt\ *n*, *pl* **crow's-feet** \-ˈfē\ : any of the wrinkles around the outer corners of the eyes — *usu.* used in *pl.*  
**crow's nest** *n* : a partly enclosed platform high on a ship's mast for use as a lookout  
**CRT** \ˈsē-(j)är-ˈtē\ *n*, *pl* **CRTs** or **CRT's** : CATHODE-RAY TUBE; *also* : a display device incorporating a cathode-ray tube  
**CRT abbr** carrier route  
**crucial** \ˈkrū-shəl\ *adj* : DECISIVE; *also* : IMPORTANT, SIGNIFICANT  
**crucible** \ˈkrū-sə-bəl\ *n* : a heat-resistant container in which material can be subjected to great heat  
**crucifix** \ˈkrū-sə-ˈfiks\ *n* : a representation of Christ on the cross  
**crucifixion** \ˈkrū-sə-ˈfik-shən\ *n* 1 *cap* : the crucifying of Christ 2 : the act of crucifying  
**cruciform** \ˈkrū-sə-ˈfɔrm\ *adj* : shaped like a cross  
**crucify** \ˈkrū-sə-ˈfi\ *vb* -fied; -fying 1 : to put to death by nailing or binding the hands and feet to a cross 2 : MORTIFY 3 : TORTURE, PERSECUTE  
**crude** \ˈkrūd\ *adj* **cruder**; **crudest** 1 : not refined : RAW (~ oil) (~ statistics) 2 : lacking grace, taste, tact, or polish : RUDE — **crudely** *adv* — **crudity** \ˈkrū-də-tē\ *n*  
**crude** *n* : unrefined petroleum  
**crue** \ˈkrū-əl\ *adj* **crue-ler** or **crue-lerer**; **crue-lest** or **crue-lest** : causing pain and suffering to others : MERCILESS — **crue-ly** *adv* — **crue-ty** \-tē\ *n*  
**cruet** \ˈkrū-ət\ *n* : a small usu. glass bottle for vinegar, oil, or sauce  
**cruise** \ˈkrüz\ *vb* **cruised**; **cruising** [*D* *kruisen* to make a cross, cruise] 1 : to sail about touching at a series of ports 2 : to travel for enjoyment 3 : to travel about the streets at random 4 : to travel at the most efficient operating speed (the *cruising* speed of an airplane) — **cruise** *n*  
**cruiser** \ˈkrū-zər\ *n* 1 : SQUAD CAR 2 : a large fast moderately armored and gunned warship 3 : a motorboat equipped for living aboard  
**cruller** \ˈkrū-lər\ *n* 1 : a small sweet cake in the form of a twisted strip fried in deep fat 2 *Northern & Midland* : an unraised doughnut  
**crumb** \ˈkrəm\ *n* : a small fragment  
**crumb** *vb* 1 : to break into crumbs 2 : to cover with crumbs  
**crumble** \ˈkrəm-bəl\ *vb* **crum-bled**; **crum-bling** : to

break into small pieces : DISINTEGRATE — **cru** *adj*  
**crum-my** *also* **crumby** \ˈkrə-mē\ *adj* **crum-mie**; **crumb-ier**; -est 1 : MISERABLE, FILTHY 2 : C WORTHLESS  
**crum-pet** \ˈkrəm-pət\ *n* : a small round unsweet bread cooked on a griddle  
**crum-ple** \ˈkrəm-pəl\ *vb* **crum-pled**; **crum-pling** : crush together : RUMPLE 2 : COLLAPSE  
**crunch** \ˈkrʌnʃ\ *vb* : to chew with a grinding 1 *also* : to grind or press with a crushing noise  
**crunch** *n* 1 : an act of or a sound made by *crunch* 2 : a tight or critical situation — **crunchy** *adj*  
**crusade** \ˈkrū-ˈsād\ *n* 1 *cap* : any of the expeditions the 11th, 12th, and 13th centuries undertake Christian countries to take the Holy Land from Muslims 2 : a reforming enterprise undertaken with zeal — **crusade** *vb* — **crusad-er** *n*  
**cruse** \ˈkrüz, ˈkrūs\ *n* : a jar for water or oil  
**crush** \ˈkrʌʃ\ *vb* 1 : to squeeze out of shape 2 : EMBRACE 3 : to grind or pound to small bits 4 : C WHELM, SUPPRESS  
**crush** *n* 1 : an act of crushing 2 : a violent crowd : INFATUATION  
**crust** \ˈkrʌst\ *n* 1 : the outside part of bread; *als* piece of old dry bread 2 : the cover of a pie 3 : a surface layer — **crust-al** *adj*  
**crus-ta-cean** \ˈkrʌs-ˈtā-shən\ *n* : any of a large class of mostly aquatic arthropods (as lobsters or crabs) having a firm crustlike shell — **crustacean** *adj*  
**crusty** *adj* **crust-ier**; -est 1 : having or being a crust : CROSS, GRUMPY  
**crutch** \ˈkrʌtʃ\ *n* : a supporting device; *esp* : a support fitting under the armpit for use by the disabled while walking  
**crux** \ˈkrʌks, ˈkrüks\ *n*, *pl* **crux-es** 1 : a puzzling or difficult problem 2 : a crucial point  
**cry** \ˈkri\ *vb* **cried**; **crying** 1 : to call out : SHOUT : proclaim publicly : ADVERTISE 3 : WEEP  
**cry** *n*, *pl* **cries** 1 : a loud outcry 2 : APPEAL, ENTRANCE 3 : a fit of weeping 4 : the characteristic sound uttered by an animal 5 : DISTANCE — *usu.* used in the phrase *a far cry*  
**cry-ba-by** \ˈkri-ˈbā-bē\ *n* : one who cries easily or often  
**cryo-genic** \ˈkri-ə-ˈje-nik\ *adj* : of or relating to production of very low temperatures; *also* : involving the use of a very low temperature — **cryo-genic-ly** \-ni-k(ə-)lē\ *adv*  
**cryogenics** \ˈkri-ə-ˈnɪks\ *n* : a branch of physics that relates to the production and effects of very low temperatures  
**cryo-lite** \ˈkri-ə-ˈlɪt\ *n* : a usu. white mineral used in making aluminum  
**crypt** \ˈkript\ *n* : a chamber wholly or partly underground  
**cryptic** \ˈkrip-tik\ *adj* : meant to be puzzling or mysterious  
**crypt-to-gram** \ˈkrip-tə-ˈgram\ *n* : a communication by cipher or code  
**cryptog-raphy** \ˈkrip-ˈtə-grə-fē\ *n* : the coding and decoding of secret messages — **cryptog-rapher** \-fər\ *n*  
**crystal** \ˈkrist-əl\ *n* [*ME* *cristal*, fr. *OF*, fr. *L* *crystal-lum*, fr. *Gk* *krystallos* ice, crystal] 1 : transparent quartz 2 : something resembling crystal (as transparency); *esp* : a clear glass used for table glasses 3 : a body that is formed by solidification of a substance and has a regular repeating arrangement of atoms and often of external plane faces (a salt ~) : the transparent cover of a watch dial  
**crystal-line** \ˈkrist-əl-ən\ *adj* 1 : made of or resembling crystal 2 : very clear or sparkling  
**crystal-ize** *Brit* var of **CRYSTALLIZE**  
**crystal-ize** \ˈkrist-əl-ɪz\ *vb* -lized; -lizing 1 : to sume or cause to assume a crystalline form 2 : to